

CDDIS SUMMARY FOR THE 2002 LTP ANNUAL REPORT

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Code 922

Introduction

The CDDIS is a dedicated data center supporting the international scientific community as NASA's space geodesy data archive since 1982. This data archive was initially conceived to support NASA's Crustal Dynamics Project; since the end of this successful program in 1991, the CDDIS has continued to support the science community through an RTOP from NASA's Solid Earth and Natural Hazards program, HQ Code YS. The CDDIS provides easy and ready access to a variety of data sets, products, and information about these data. The CDDIS archive includes Global Positioning System (GPS), GLObal Navigation Satellite System (GLONASS), Satellite Laser Ranging (SLR), Very Long Baseline Interferometry (VLBI), and Doppler Orbitography and Radiolocation Integrated by Satellite (DORIS) data and products. The specialized nature of the CDDIS lends itself well to enhancement to accommodate diverse data sets and user requirements. Information about the system is available at <http://cddisa.gsfc.nasa.gov>.

The CDDIS serves as one of the primary data centers for the following services within the International Association of Geodesy (IAG):

- International GPS Service (IGS) and its diverse pilot projects and working groups
- International Laser Ranging Service (ILRS)
- International VLBI Service for Geodesy and Astrometry (IVS)
- International Earth Rotation Service (IERS)
- International DORIS Service (IDS)

The CDDIS is operational on a dedicated computer facility located in Building 33 at NASA GSFC. This computer facility hosts web sites for the CDDIS, the ILRS, and several other GSFC facilities. The majority of the CDDIS data holdings are accessible through anonymous ftp and the web.

By the end of 2002, users had downloaded over 40 million files, averaging over 250 Gbytes in size each month. Furthermore, nearly 200 users accessed the CDDIS on a daily basis to download data. Nearly ninety countries accessed and downloaded data from the CDDIS last year. Over 120 institutions in over sixty countries supply data to the CDDIS on a daily basis for archival and distribution to the international user community.

CDDIS Activities in 2002

In support of the IGS pilot project on Low Earth Orbiter (LEO) missions, the CDDIS enhanced its archive to include GPS data from flight receivers on-board SAC-C and

CHAMP. Data from ICESat and JASON will be archived in 2003. Analysts will retrieve these data to produce precise orbits of these LEO platforms, which will aid in the generation of other products, such as temperature and water vapor profiles in the neutral atmosphere and ionosphere imaging products. The IGS LEO Pilot Project will test the ability of the various components of the IGS infrastructure to support near real-time acquisition, dissemination, and processing of GPS data.

The CDDIS began archiving data from continuously-operated GPS receivers located at or near tide gauge instruments in support of another IGS pilot project, TIGA-PP, or the Tide Gauge Benchmark Monitoring Pilot Project. Analysts using these data will produce time series of coordinates for studying vertical motions of tide gauges and tide gauge benchmarks.

The CDDIS staff assisted in the publication of several ILRS documents, particularly the 2000 and 2001 annual reports and the updated ILRS brochure.

New Thrusts for the CDDIS

Providing funds are available, a new LINUX-based system will be purchased to replace the current UNIX server. This system will be equipped with one or two RAID disk arrays (nearing one TB of on-line disk space) and optionally a dedicated tape backup system.

Staffing and Funding

The CDDIS staff consists of one civil servant and 2.5 (down from three) Raytheon ITSS contractors. Carey Noll has a BA in Mathematics; Maurice Dube, lead contractor, has a PhD in Physics.

Outreach

Carey Noll gave a presentation on remote sensing to three kindergarten classes at Holy Trinity Episcopal Day School. Ms. Noll also mentored the Holy Trinity middle school's Botball team (<http://www.botball.org>), providing assistance in creation of websites for the regional competition. A presentation on Botball was given to the SISTERS program at GSFC.

Publications in 2002

C. Noll and M. Dube, "The CDDIS Data Center – NASA's Space Geodesy Data Archive", *EOS Transactions, American Geophysical Union*, May 2002.

Tavernier, Gilles, et.al., Current Status of the DORIS Pilot Experiment International DORIS Service evolving. *Geophysical Research Abstracts*. April, 2002.

Dunn, Peter, et.al., Status of the ILRS; progress and future challenges. Geophysical Research Abstracts. April, 2002.

Acronyms

CDDIS	Crustal Dynamics Data Information System
DORIS	Doppler Orbitography and Radiopositioning Integrated by Satellite
GLONASS	Global'naya Navigatsionnay Sputnikovaya Sistema (Global Navigation Satellite System)
GPS	Global Positioning System
IAG	International Association of Geodesy
IDS	International DORIS Service
IERS	International Earth Rotation Service
IGS	International GPS Service
ILRS	International Laser Ranging Service
IVS	International VLBI Service for Geodesy and Astrometry
LEO	Low Earth Orbiter
POD	Precision Orbit Determination
RAID	Redundant Array of Inexpensive Disk
SLR	Satellite Laser Ranging
VLBI	Very Long Baseline Interferometry

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